SUBSECTION 8.9

Agriculture and Soils

8.9 Agriculture and Soils

8.9.1 Introduction

This subsection describes the potential environmental effects on agriculture and soils from the construction and operation of the project. Potential impacts are assessed for the Walnut Energy Center (WEC) site and for the natural gas supply, water supply, and electric transmission line corridors.

Subsection 8.9.2 presents the laws, ordinances, regulations, and standards (LORS) applicable to agriculture and soils. Subsection 8.9.3 describes the existing environment that could be affected, including agricultural use and soil types. Subsection 8.9.4 identifies potential environmental effects, if any, from project development, and Subsection 8.9.5 presents mitigation measures. Subsection 8.9.6 describes the required permits and provides agency contacts. Subsection 8.9.7 provides the references used to develop this subsection.

A map of soil types is provided in Figure 8.9-1 (figures are located at the end of this subsection). Important farmland is shown in Figure 8.9-2. LORS are in Table 8.9-1. The physical and chemical characteristics are summarized in Table 8.9-2. Soil loss is discussed in Subsection 8.9.3.6. The effect of plant emissions on soils is presented in Subsection 8.9.4.4. Required permits are summarized in Table 8.9-3.

8.9.2 Applicable Laws, Ordinances, Regulations, and Standards

Federal, state, county, and local LORS applicable to agriculture and soils are discussed below and summarized in Table 8.9-1.

8.9.2.1 Federal

8.9.2.1.1 Federal Water Pollution Control Act of 1972 and the Clean Water Act of 1977

The Federal Water Pollution Control Act of 1972, commonly referred to as the Clean Water Act (CWA) following amendment in 1977, establishes requirements for discharges of stormwater or waste water from any point source that would affect the beneficial uses of waters of the United States. The State Water Resources Control Board (SWRCB) adopted one statewide National Pollution Discharge Elimination System (NPDES) General Permit that would apply to storm water discharges associated with construction, industrial, and municipal activities. The Regional Water Quality Control Board (RWQCB) is the administering agency for the NPDES permit program. The CWA's primary effect on agriculture and soils within the project area consist of control of soil erosion and sedimentation during construction, including the preparation and execution of erosion and sedimentation control plans and measures for any soil disturbance during construction.

8.9.2.1.2 USDA Engineering Standards

The U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), *National Engineering Handbook*, 1983, Sections 2 and 3 provide standards for soil conservation during planning, design, and construction activities. The project would need to conform to these standards during grading and construction to limit soil erosion.

8.9.2.2 State

8.9.2.2.1 California Porter-Cologne Water Quality Control Act

The California Water Code requires protection of water quality by appropriate design, sizing, and construction of erosion and sediment controls. The discharge of soil into surface waters resulting from land disturbance may require filing a report of waste discharge (see Water Code Section 13260a).

TABLE 8.9-1
Laws, Ordinances, Regulations, and Standards for Agricultural and Soil Resources

Jurisdiction	LORS	Purpose	Regulating Agency	Applicability (AFC Section Explaining Conformance)
Federal	Federal Water Pollution Control Act of 1972: Clean Water Act of 1977 (including 1987 amendments).	Regulates stormwater discharge from construction and industrial activities	RWQCB – Central Valley Region under State Water Resources Control Board	Subsections 8.9.2.1 and 8.9.4.2.
	Natural Resources Conservation Service (1983), *National Engineering Handbook*, Sections 2 and 3.	Standards for soil conservation	Natural Resources Conservation Commission	Subsections 8.9.2.1 and 8.9.5.
State	Porter-Cologne Water Quality Control Act of 1972; Cal. Water Code 13260-13269: 23 CCR Chapter 9.	Regulates stormwater discharge	California Energy Commission (CEC) and the Central Valley Region under State Water Resources Control Board	Subsections 8.9.2.2 and 8.9.4.2.
Local	City of Turlock General Plan, 1992, revised 2002	Describes local policies for agricultural and soil resources	City of Turlock	Subsection 8.9.2.3.
	City of Turlock Municipal Code, Ordinance No. 981 CS	Regulates grading, erosion and sediment control for construction projects within City limits	Engineering Division	Subsection 8.9.2.3.
	Stanislaus County Public General Plan, 1994	Describes local policies for agricultural and soil resources	Planning Commission Board of Supervisors Planning Department Agricultural Commissioner	Subsection 8.9.2.3.
	California Land Conservation (Williamson) Act of 1965	Provides financial incentives for conservation of agricultural lands	County Assessor Planning Department Planning Commission Board of Supervisors	Subsection 8.9.2.3.

8.9.2.3 Local

The City of Turlock has established an ordinance for grading, erosion, and sediment control. This ordinance establishes permitting requirements and exemptions for general earthwork operations, sediment transport, and erosion control activities that can cause the discharge of pollutants into stormwater systems or watercourses.

The Stanislaus County General Plan includes an agricultural element describing policies and goals pertaining to agricultural land and conversion issues.

8.9.2.3.1 Stanislaus County General Plan

Agricultural Element

Policies and implementation programs are found in the Agricultural Element of the Stanislaus County General Plan (Stanislaus County 1994), providing for the long-term conservation and use of agricultural land. The agricultural element includes goals and policies that promote and protect agricultural uses within the county. The goals of the policies are designed to achieve three main goals:

1. Strengthen the agricultural sector of the economy
2. Preserve our agricultural lands for agricultural uses
3. Protect the natural resources that sustain agriculture in Stanislaus County

The main policies that will be affected by the project are associated with Goals 2 and 3 stated above. Goal 2 policies affecting the project include "Participation in the Williamson Act," "Urbanization and the Conversion of Agricultural Land," and "Assessing and Mitigating the Impacts of Farmland Conversion." The primary Goal 3 policy affecting the project is conservation of soil resources.

8.9.2.3.2 City of Turlock

General Plan

The City of Turlock (City) General Plan presents policies that provide for guidance and implementation of land use controls in and around the City's sphere of influence. Included in the general plan are provisions for controlling open space land uses, ranging from parks to agriculture. With agriculture being of primary importance within the City and County, the general plan includes policies that protect and encourage agricultural production.

Guiding Policies include retention of agricultural lands by limiting urban expansion to planned areas, support implementation of the Stanislaus County General Plan Agricultural Element, and protecting natural resources. Urban expansion is generally limited to designated areas, and is controlled by "minimizing conflicts between agriculture and urban activities." Support for the Stanislaus County Agricultural Element and Right-to-Farm ordinance will help protect agricultural operations from urban pressures. Natural resources, including soil, air and water essential for agricultural production, will be protected and restored to allow for continued productivity.

Implementing Policies include retention of buffer zones, analysis of agricultural impacts during planning, preservation of agricultural lands, and affirmation of the Right-to-Farm ordinance. Buffer zones will be established along the urban boundaries, protecting urban development and agricultural activities. Loss of agricultural land will be analyzed as part of the environmental documentation for projects affecting agricultural areas. Preservation of

agricultural lands will be promoted by participation in the Williamson Act, providing tax incentives for farmers. Right-to-Farm notices must be included in all deeds recorded with the city.

Turlock Municipal Code

Prior to construction of the proposed site and associated linears, a grading permit will be required in accordance with City of Turlock Ordinance No. 981-CS. The primary purpose of the ordinance is to "promote the conservation of natural resources and to protect public health and safety, through the reduction or elimination of undue settlement, erosion, siltation, and flooding by minimizing the adverse effects of grading, cut and fill operations, water runoff and soil erosion."

To obtain the permit, an Interim Erosion and Sediment Control Plan must be submitted that will address site conditions and proposed erosion control measures during construction activities. A Final Dust, Erosion and Sediment Control Plan may be required to address site conditions following final grading. This Plan would be required prior to construction of site facilities.

A Soils and Engineering Geology Report will be required to address the site geology and geotechnical design requirements. The report will provide conclusions and recommendations for grading procedures and soil stabilization techniques, if required.

8.9.3 Environmental Setting

Agricultural land uses within the proposed WEC site and rights-of-way include production agriculture, comprised primarily of dairies and supporting feed crops including corn, alfalfa, soybeans, and hay. There are also scattered almond orchards and agricultural processing facilities located in the project vicinity. These agricultural uses are interspersed with small residential areas and roadways. Most of the gas, water, and electrical transmission rights-of-way follow existing roadways and rights-of-way.

Soil survey mapping units characterizing the types and distribution of soils within the project area, as shown on Figure 8.9-1, are taken from: *Soil Survey of Western Stanislaus Area, California* (NRCS 1964). The electronic shape files for these mapping units were downloaded from the NRCS web site. Detailed soil descriptions were developed from the soil survey publication (NRCS 1964) and from the Official Soil Descriptions (OSD) web page (NRCS 2002).

Data for the affected environment are summarized and presented below:

- Soil types along the project linears (water, gas, transmission) are identified in Figure 8.9-1.
- Table 8.9-2 summarizes the characteristics of each of the individual soil mapping units identified on Figure 8.9-1 in the project vicinity including the site boundaries and the project's linear facilities. The table summarizes depth, texture, drainage, permeability, erosion hazard rating, land capability classification, and fertility as an indicator of its revegetation potential.
- Figure 8.9-2 shows "Important Farmlands" as defined by the California Department of Conservation (CDC) (CDC 2002a). The farmland mapping designated specific areas as

follows: Prime Farmland; Farmland of Statewide Importance; Unique Farmland, Farmlands of Local Importance, Grazing Land, Urban and Built-Up Land, Other Land, and Water.

- Soil series designated as "Prime Farmland" (or Farmland of Statewide Importance) are also listed in Table 8.9-2.

TABLE 8.9-2
Soil Mapping Unit Descriptions and Characteristics

Map Unit	Description
DeA	**Delhi loamy sand – slope class (0 to 3%)** – Prime Farmland – Somewhat excessively to excessively drained – Very deep soils, gently undulating and, in places hummocky relief – Formed in sands reworked by wind from granitic alluvium – Loamy sand surface, subsurface, and substratum – Permeability is rapid – Runoff is negligible to slow – High wind erosion potential – Moderate to low fertility – Capability Class IIIe-4 – Taxonomic class: Mixed, thermic Typic Xeropsamments – Elevation range from 50 to 100 feet
DrA	**Dinuba sandy loam – slope class (0 to 1%)** – Prime Farmland – Moderately well drained (or imperfectly drained where over irrigated) – Gently sloping to nearly level alluvial fans and valley plains – Formed in moderately-coarse textured granitic alluvium – Sandy loam surface/subsurface over stratified silt loam/very fine sandy loam substratum – Permeability is moderately rapid in surface (less rapid in subsurface); overall moderate – Runoff is very slow – Water erosion hazard is slight – Soils are neutral to slightly acidic – Moderate fertility – Capability Class IIw-3 – Taxonomic class: coarse-loamy, mixed, thermic Typic Haploxeralfs – Elevation range from 50 to 100 feet
DwA	**Dinuba sandy loam, slightly saline-alkali – slope class (0 to 1%)** Similar characteristics as noted above with the following differences: – Not listed as an Important Farmland Soil – Permeability is slow – Moderately alkaline reaction – Low Fertility

TABLE 8.9-2
Soil Mapping Unit Descriptions and Characteristics

Map Unit	Description
HfA	**Hilmar loamy sand – slope class (0 to 1%)** – Farmland of Statewide Importance – Soil is somewhat poorly or poorly drained – Moderately deep soils, formed in wind-worked sands from granitic alluvium – Gently undulating but in places have small, hummocky areas – Sand surface and subsurface over stratified silt loam and sandy loam substratum – Permeability is very rapid – Runoff is very slow – Moderate wind erosion potential – Low fertility – Capability Class IIIw-4 – Taxonomic class: sandy over loamy, mixed active, calcareous, thermic Aeric Halaquepts – Elevation range from 50 to 100 feet
HkaA	**Hilmar loamy sand, poorly drained, slight saline-alkali - slope class (0 to 1 %)** Similar characteristics as noted above with the following differences: – Not listed as an Important Farmland Soil – Formed in depressions in nearly level alluvial fans – Poorly drained – Runoff is 'ponded', implying restricted infiltration from surface sealing – Water erosion hazard is none – Capability Class IVw-4
HmA	**Hilmar sand – slope class (0 to 3%)** Similar characteristics as noted above with the following differences: – Not listed as an Important Farmland Soil – Occur on nearly level to very gently undulating fans, some hummocky areas – High wind erosion potential – Capability Class IIIw-4
MdA	**Madera sandy loam – slope class (0 to 2%)** – Farmland of Statewide Importance only if the pH is lowered below 9.0 – Soil is well to moderately well drained – Moderately deep to hardpan medium and moderately coarse soils over hardpan – Formed in moderately-coarse textured granitic alluvium – Occurs on gently undulating old fans, unleveled areas with mound microrelief – Sandy clay to clay surface layer over sandy clay subsurface – Permeability is very slow – Runoff is very slow – Water erosion hazard is slight – Slightly acidic surface soils and slightly acidic subsurface – Low fertility – Capability class IVs-3 – Taxonomic class: Fine, smectitic, thermic, Abruptic Durixeralfs – Elevation range from 100 to 250 feet

TABLE 8.9-2
Soil Mapping Unit Descriptions and Characteristics

Map Unit	Description
TpA	**Traver sandy loam, slightly saline-alkali – slope class (0 to 1 %)**
	– Prime Farmland only if the electrical conductivity is less than 4 mmhos/cm – Soil is moderately well to somewhat poorly drained – Medium to moderately course-textured soils that are saline-alkali – Formed in granitic alluvium – Occurs on gently undulating old fans, unleveled areas with mound microrelief – Loam surface and subsurface over sandy loam substratum – Permeability is moderate to slow – Runoff is slow – Water erosion hazard is slight – Strongly alkaline surface/subsurface and moderately alkaline substratum – Low Fertility – Capability Class IIs-6 – Taxonomic class: coarse-loamy, mixed, thermic Natric Haploxeralfs – Elevation range from 35 to 60 feet
TuA	**Tujunga loamy sand – slope class (0 to 3%)**
	– Prime Farmland – Somewhat excessively drained – Nearly level bottom lands and alluvial fans, shallow channels in places – Formed in coarse-textured granitic alluvium – Loamy sand surface/subsurface over stratified sand and silt loam substratum – Permeability is rapid – Runoff is negligible to very slow – Water erosion hazard is slight (channeling on bottom land) – Moderate wind erosion on fans – Neutral to mildly alkaline throughout – Low fertility – Capability Class IIIe-4 – Taxonomic class: mixed, thermic Typic Xeropsamments – Elevation range from 35 to 100 feet

Notes:
Soil characteristics are based on soil mapping provided in the published soil survey (NRCS 1964) and a review of corresponding OSDs. Soil map units described above are limited to those mapped in the vicinity of the WEC project and associated linear features (NRCS 1964).

8.9.3.1 Agricultural Use On and Around the Proposed WEC Site

All 69 acres of the parcel are currently farmed for corn in the summer and winter oats in the winter. The property located to the north across the railroad tracks is used by Foster Farms as a poultry feed processing facility. A cheese producing facility is located northeast of the project site. Del Mesa Farms is located northeast of the project site. Lands immediately to the east, south, and west of the proposed site are used for production of corn and other dairy cattle feed crops. There are also scattered residences. To construct the site, the entire 69 acres would be temporarily removed from agricultural production. The 18-acre project site would be permanently cleared, graded, filled, and paved or covered with gravel for the plant site, roadways, and parking areas. Approximately 51 acres of the site would be used temporarily for the construction laydown, parking, and trailer area. After construction, the construction, laydown, parking and trailer area, and the remaining 51 acres of the 69-acre parcel would be returned to agricultural production or developed at a later date.

8.9.3.2 Agricultural Use Along Water and Gas Pipelines

The proposed and alternative water and gas pipelines and transmission line alignments were chosen to minimize their length and disruption of roads and agricultural uses. The site is currently mapped as Prime Farmland. The majority of the water and gas pipeline and transmission line alignments run adjacent to or within lands designated as Prime Farmland. Smaller proportions of the linears run through or adjacent to Farmland of Statewide Importance, Unique Farmland, Urban and Built Up Land, or Other Land. The water and gas pipelines run almost entirely along existing roadways and will be buried to minimize disturbance to agriculture lands. Land uses within the proposed corridor (500 feet on each side of the pipeline) are composed primarily of production agriculture (dairies and corn, alfalfa, and hay fields) with interspersed residential properties.

Generally, construction of the pipelines would consist of trenching and stockpiling of native soil, compaction of the trench bottom, laying of the pipe followed by backfilling or replacement of the native soils, and restoration of the original ground elevation contours. Where water or natural gas pipeline cross agricultural land, the land would be returned to agricultural production following completion of the pipeline installation by contractors. In the project area, the proposed pipeline routes mostly follow existing roadways, but in portions will cross existing agricultural fields. As such, the pipeline construction would result in temporary disturbances of lands adjacent to or within prime agricultural lands.

8.9.3.3 Agricultural Use Along the Electrical Transmission Line

The proposed site is located near existing transmission facilities but will require the construction of additional overhead transmission lines as follows (Figure 8.9-1). The 115-kV transmission line will interconnect from the project site, about 1,950 feet west to one of two of the existing Turlock Irrigation District (TID) 115-kV transmission lines, which run along the west side of South Washington Road. An existing 12-kV distribution line will be installed under the new 115-kV transmission line and the existing poles replaced with new poles, accommodating both the 12-kV and 115-kV lines. The 69-kV transmission lines will interconnect from the project site, about 670 feet to existing TID 69-kV transmission lines, which runs along the south property line of the project parcel. The proposed transmission lines would cross agricultural fields currently used for dairy feed production. It should be noted that the entire project area is located within an area that has already been rezoned by the City of Turlock for planned industrial use, anticipating the future development of the parcel.

8.9.3.4 Soil Types Within the Study Area

Table 8.9-2 provides the physical and chemical properties of the soil mapping units that are found in the vicinity of the proposed WEC site and along proposed linear routes.

8.9.3.5 Prime Farmlands

The designations of Important Farmlands in the project vicinity are shown on Figure 8.9-2 (CDC 2002a) and summarized in Table 8.9-2. This map is derived from information provided from the Farmland Mapping and Monitoring Program (FMMP) administered by the Division of Land Resource Protection in the CDC.

The Important Farmland Map (Figure 8.9-2) shows that most of the project area is considered as Prime Farmland. A smaller proportion of the land (in decreasing order) in the project area is mapped as Farmland of Statewide Importance, Other Land, Unique Farmland, or Farmland of Local Importance. There is currently a consideration by local farm groups to redefine the category of Farmland of Local Importance to include all lands that support activities important to the top 10 or 15 cash crops (e.g., dairies or nut hauling/shelling operations) rather than their current classification as Other Lands.

Statistics from a 1998 inventory of important farmlands in Stanislaus County indicate that there are approximately 280,606 acres of land classified as Prime Farmland, Farmlands of Statewide Importance, Unique Farmlands, or Farmlands of Local Significance (CDC 2002b). The inventory also indicates a 1.56 percent decline between 1996 and 1998. Commensurate increases of Urban and Built-up Land and Other Land classifications are noted for the 1996 to 1998 period. Statistics for the 1998 to 2000 changes in Important Farmland acreages for Stanislaus County were not available at the time of this report.

As shown on Figure 8.9-2, the project site is on land identified as Prime Farmland, as is the majority of land to the south and east where the gas and water pipeline alignments are located. The overhead transmission lines will run almost entirely through areas mapped as Prime Farmland. The natural gas pipeline runs west through Prime Farmland to Commons Road, and then south to Bradbury Road. The gas pipe alignment along these roadways runs adjacent to areas mapped as Prime Farmland with scattered areas of Other Lands or Urban and Built Up Lands. Commons Road runs through an area of Farmland of Statewide Importance in the southern portion of the alignment where it approaches Bradbury Road. The recycled water supply pipeline runs south of the proposed site through Prime Farmlands to Ruble Road where it runs east along the roadway adjacent to Prime Farmland for approximately 0.6 mile toward the City of Turlock WWTP. The majority of the water supply pipeline route east of this point is located adjacent to lands that are classified as Farmland of Statewide Importance, Unique Farmland, Other Land, or Urban and Built Up Land (nearest the WWTP).

The potable water line for the project site will extend approximately 0.9 mile along Ruble Road from an existing municipal water line on South Tegner Road. As previously mentioned, this area is currently mapped as Prime Farmland.

8.9.3.6 Soil Loss and Erosion

The water erosion hazard designations for soils in the project area are listed in Table 8.9-2. Topographic slopes in the immediate project area are less than 3 percent. The water erosion hazard levels ascribed to the soil mapping units at the proposed site and along linear features generally indicate that water erosion hazards are minimal (i.e., classified as no erosion hazards or slight erosion hazard). Given the nearly level topography, soil types, and the anticipated use of construction best management practices (BMPs), the overall potential for soil loss from water erosion is slight. The soils are indicated to have moderate to low fertility so this will have to be considered with respect to the potential limitations for revegetation of disturbed areas.

Where provided in the soil survey, the potential for wind erosion is summarized in Table 8.9-2. The wind erosion hazard was not provided for most of the soil mapping units described in the soil survey (NRCS 1964). However, given the sandy and loamy surface

textures of the soils in this area, the soils are presumed to have a moderate to high potential for wind erosion.

For two soil mapping units, a moderate to high hazard of wind erosion was indicated. These mapping units are Hilmar loamy sand (HfA) and Hilmar sand (HmA). These mapping units are found in the vicinity of the water supply pipeline east of the proposed site. Wind erosion hazards are generally associated with bare or disturbed soil. Based on the anticipated soil conditions soil erosion by wind will require adequate controls with BMPs including regular wetting of construction areas and soil stockpiles.

The potential soil loss for the project was estimated using the Revised Universal Soil Loss Equation (RUSLE2) software downloaded from the web site at http://bioengr.ag.utk.edu/rusle2/. Soil loss was calculated as tons/acre/year by the program and then multiplied by the site feature acreage and assumed construction period to get total soil loss in tons for the project duration. This information is summarized in Table 8.9-3. The potable water supply line is not listed separately because it is anticipated that this line will be installed concurrently and run through the same alignment as the recycled water supply line west of Tegner Road.

The use of vegetative cover to stabilize bare soil areas would reduce the potential soil erosion to nearly insignificant levels (i.e., less than a pound of soil/acre/year). These soil loss rates estimated for the entire project area and construction cycle would result in approximately 130 lbs. of soil loss.

It is assumed that other BMPs that would be instituted to prevent erosion and sedimentation from exposed soil areas during precipitation events would result in a similar, significant reduction in off-site soil movement. Given the sandy nature of the HfA and HmA soil units, BMPs to control wind erosion losses will also be required.

TABLE 8.9-3
Estimated Soil losses anticipated from project activities

Project Feature	Soil Type	Dimensions (ft.)	Area (Acres)	Estimated Soil Loss, Bare Soil (tons)	Estimated Soil Loss, Vegetated, (tons)
Project Site	**DrA** Dinuba sandy loam, 0-1% slopes	2,640 ft. long 1,138 ft. wide	68.970	114.490	0.0510
Water Supply Pipeline	**DrA** Dinuba sandy loam, 0-1% slopes	3,570 ft. long 60 ft. wide	4.917	4.081	0.0018
	HfA Hilmar loamy sand, 0-1% slopes	4,180 ft. long 60 ft. wide	5.758	3.109	0.0012
	HmA Hilmar sand, 0-1% slopes	781 ft. long 60 ft. wide	1.076	0.527	0.0002

TABLE 8.9-3
Estimated Soil losses anticipated from project activities

Project Feature	Soil Type	Dimensions (ft.)	Area (Acres)	Estimated Soil Loss, Bare Soil (tons)	Estimated Soil Loss, Vegetated, (tons)
Natural Gas Supply Pipeline	**DrA** Dinuba sandy loam, 0-1% slopes	5,447 ft. long 60 ft. wide	7.503	6.227	0.0028
	DwA Dinuba sandy loam, slight saline-alkali, 0-1% slopes	11,647 ft. long 60 ft. wide	16.043	13.316	0.0059
	HfA Hilmar loamy sand, 0-1% slopes	1,939 ft. long 60 ft. wide	2.671	0.144	0.0006
115 kV Transmission Line	**DrA** Dinuba sandy loam, 0-1% slopes	1,770 ft. long 60 ft. wide	2.438	2.023	0.0009
	DwA Dinuba sandy loam, slight saline-alkali, 0-1% slopes	180 ft. long 60 ft. wide	0.248	0.206	0.0001
69 kV Transmission Line	**DrA** Dinuba sandy loam, 0-1% slopes	650 ft. long 60 ft. wide	0.895	0.743	0.0003
Total for Project			**110.519**	**144.866**	**0.0648**

Notes:
Soil loss estimated using the Revised Universal Soil Loss Equation (RUSLE2) software downloaded from the web site at http://bioengr.ag.utk.edu/rusle2/. Soil loss was calculated as tons/acre/year by the program and then multiplied by the site feature acreage and assumed construction period to get total soil loss in tons for the project duration.

The potable water supply line is not listed separately because it is anticipated that this line will be installed concurrently and run through same alignment as the recycled water supply line west of Tegner Road.

Assumptions used in the calculation of soil loss are as follows:

Climatic conditions: Chosen for Fresno, California, the closest location to project site within program.
Soils: Chosen from available list to most closely match project area soils
Slope: 1% (top of the mapping unit slope range)
Slope length: 300 feet

'Bare Soil, Rough Surface' used for uncontrolled soil loss

'Tall Fescue, Not Harvested' used to estimated soil loss with vegetative cover and BMP use.

Estimated 2 years for construction of the project site and 1 year for construction of the linear features.

8.9.3.7 Other Significant Soil Characteristics

A significant soil characteristic concerning the proposed project is the potential for shallow groundwater that could affect excavations. In particular, the HfA soil unit located along the recycled water supply pipeline alignments may have an issue with shallow groundwater that could result in complications for excavation and pipe laying. It is proposed that these excavations be done in late summer when the groundwater levels are anticipated to be at their lowest.

Given that the HfA soil mapping unit is indicated to be somewhat poorly to poorly drained, there is also a potential for jurisdictional wetlands to occur. A review of the National Wetlands Inventory information provided by the NRCS did not indicate the presence of wetlands on the proposed project site or along the linears. It is likely that subsurface drainage improvements by farmers have eliminated the potential for wetlands to occur in all areas currently used for row crop production. Expansive clays in subsurface soils is another soil characteristic that can pose a potential problem for construction of pipelines because of the potential for soil movement due to shrink/swell characteristics. In particular, the Madera sandy loam (MdA) soil unit could pose a problem for construction of the natural gas supply pipeline. Although there are no specific areas where the pipelines cross the MdA soil units, their occurrence in proximity to proposed pipeline locations (e.g., near the intersection of Washington Road and Linwood Avenue) indicates that there is a potential for expansive clays to be found in the project area. However, construction problems with expansive clays can be avoided by backfilling those portions of the pipeline trench with a suitable, imported fill that has a low capacity for shrink/swell.

The fertility of the soils in the area are indicated to be moderate to low. Many of the proposed construction areas are located within or along the edges of managed agricultural fields. It is likely that the surface soils in these areas have been amended by the farmers to augment their inherent fertility. To minimize adverse effects on soil fertility, it is proposed that surface soils be segregated during construction/excavation and used to reconstitute areas that will be revegetated after construction. Additional soil amendments should be considered where needed to assure the success of revegetation.

Some of the soils in these farmland classifications are considered to be saline-alkali soils. Revegetation on soils that are saline-alkali should not pose any problems as long as adequate irrigation is provided while plants are being established.

8.9.4 Potential Environmental Consequences

The following subsections describe the potential environmental effects on agricultural production and soils during the construction and operation phases of the project.

The potential for impacts to agricultural and soils resources were evaluated with respect to the criteria described in the Appendix G checklist of CEQA. An impact is considered potentially significant if it would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps for the Farmland Mapping and Monitoring Program by the California Resources Agency to non-agricultural use
- Conflict with existing zoning for agricultural use or a Williamson Act contract
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use
- Impact jurisdictional wetlands
- Result in substantial soil erosion

8.9.4.1 Impacts on Agricultural Soils

Construction of the project would permanently remove up to 18 acres from agriculture, but this impact would be only on the proposed project site. The project site is in the process of being acquired by the Turlock Irrigation District and is not currently under a Williamson Act contract.

The project site is currently used for agricultural purposes. The City indicates that the parcel and adjacent lands are designated for planned industrial uses. The project is consistent with the City of Turlock land use and zoning designations and would eventually be used for industrial purposes, regardless of the project.

The project would represent a permanent 0.0064 percent decrease in available Important Farmlands in Stanislaus County based on the 1998 statistics. Data from the CDC indicate an increase in conversion of farmlands to Urban and Built-up lands over the past six years.

The project would also result in the temporary loss of agricultural land associated with the construction parking, trailer, and material laydown areas and along pipeline linear features. As discussed below, these areas would be restored to their agricultural use after the construction phase is completed.

The impact of agricultural conversion for the parcel that would be used for the site has previously been considered from a local and regional planning perspective by the City and County. The entire project area has already been rezoned from agricultural to planned industrial (PI) use. Although conversion of farmlands in the County appear to be increasing, the degree to which the project would convert Important Farmlands is very minor compared to available resources. Therefore, the impact of the conversion of 18 acres of the 69-acre project site, which is currently used for agricultural purposes, is considered to be less than significant.

8.9.4.2 Construction

Project construction could potentially cause increased erosion, compaction, loss of soil productivity, and disturbance of saturated soils. Soil erosion could possibly increase the sediment load within surface waters downstream of the construction site.

Construction of the project would result in temporary soil compaction in parking, trailer, and laydown areas, reducing the potential for vegetative growth, and requiring potential dust control and erosion control measures. Approximately 51 acres on the site would be affected. These areas would be restored to agricultural use after construction by removing any stored construction materials, disking the disturbed surface, and replacing the topsoil. Topsoil will have been stripped and stockpiled for use in site restoration of temporary impact areas. Any excavated soils not reused during construction at the site would be managed or removed to prevent subsequent erosion and sedimentation issues.

The amount of cut and fill required for the project has not been specifically calculated. However, some preliminary estimates can be made based on the size of the parcel, the relatively flat surface topography, and the estimated elevation of completed building pads. The total area that will be developed is 18 acres, most of which will be filled to a post-construction elevation of 2 feet above grade. This would result in approximately 58,000 cubic yards of fill on the project site.

Once constructed, the pipeline linear facilities would have no significant effect on surficial soil onsite or offsite. The overhead transmission lines would result in the permanent loss of a

limited soil area that is equivalent to the sum of the footprint areas for all the pole footings. It is currently assumed that nine towers would be used with approximately 400 square feet (i.e., 20 ft. x 20 ft.) per tower footing for a total permanent impact of 3,600 square feet or slightly less than 0.1 acre. During construction, standard erosion and dust control methods would be implemented to avoid sedimentation in storm drains and surface waterways. Use of these methods would reduce losses of soil to wind and water erosion to a less-than-significant level.

The site, construction parking and laydown area, and some linears would pass through areas currently used for agriculture. Any areas not required for project operations would be restored to pre-construction conditions. Construction of linears will require excavated topsoil to be preserved separately from the underlying excavated soils. The stockpiled topsoil would then be placed and compacted over the backfilled trench. Because these areas would be returned to their original use, these impacts would be considered temporary. For this reason, the construction of the pipeline linears would have a less than significant impact on soil resources or agricultural use.

8.9.4.3 Operation

Project operation would not result in impacts to the soil from erosion or compaction. Routine vehicle traffic during project operation would be limited to existing roads, most of which will be paved or covered with gravel. Standard operating activities would not involve the disruption of soil. When linear facilities need to be inspected or maintained, vehicle traffic near cultivated areas would be minimized. Impacts to soil from project operations would be less than significant.

8.9.4.4 Effects of Generating Facility Emissions on Soil-Vegetation Systems

There is a concern in some areas that emissions from the generating facility, principally nitrogen (NO_x) from the combustors or drift from the cooling towers, would have an adverse effect on soil-vegetation systems in the project vicinity. This is principally a concern where environments that are highly sensitive to nutrients or salts, such as serpentine habitats, are downwind of the project.

In this case, the dominant land use downwind of the project is agriculture and there are no serpentine habitats in the project area. The addition of small amounts of nitrogen to agricultural areas would be insignificant within the context of fertilizers, herbicides, and pesticides typically used.

8.9.4.5 Cumulative Effects

Although currently used for agricultural purposes, the WEC project site is located in the City of Turlock in Stanislaus County. The City's General Plan is currently being updated. However, the current General Plan designates the site for future industrial purposes and the site is currently zoned for uses consistent for the project. The WEC site is designated for industrial uses and would eventually be converted from its current agricultural use regardless of the project.

While the project is consistent with previously considered land use planning decisions, conversion of Important Farmlands in Stanislaus County has increased over the past 6 years. As indicated above, the conversion rate of Important Farmlands to Urban and Built-up Land/Other Land classifications between 1996 and 1998 was approximately

1.56 percent. However, the project would represent conversion of approximately 0.0064 percent of available Important Farmlands in Stanislaus County. As previously noted, the project occurs entirely within an area already designated as "Planned Industrial" by the City of Turlock, anticipating the eventual development of agricultural lands within the area.

The cumulative impact of agricultural conversion at the site has previously been considered from a local and regional planning perspective. This site has been zoned for industrial use for over 10 years, yet has not been converted. Therefore, potential cumulative impacts on conversion of agricultural resources in the County associated with the WEC project are considered to be less than significant.

8.9.5 Mitigation Measures

Erosion control measures would be required during construction to help maintain water quality, protect property from erosion damage, and prevent accelerated soil erosion or dust generation that destroys soil productivity and soil capacity. Temporary erosion control measures could be installed before construction begins, would be maintained and evaluated during construction, and would be removed from the site after the completion of construction.

8.9.5.1 Temporary Erosion Control Measures

Temporary erosion control measures would be implemented before construction begins, and would be evaluated and maintained during construction. These measures typically include revegetation, mulching, physical stabilization, dust suppression, berms, ditches, and sediment barriers. Vegetation is the most efficient form of erosion control because it keeps the soil in place and maintains the landscape over the long-term. Vegetation reduces erosion by absorbing raindrop impact energy and holding soil in place with fibrous roots. It also reduces runoff volume by decreasing erosive velocities and increasing infiltration into the soil.

Disturbed areas would be revegetated with rapidly growing restoration groundcover as soon as possible after construction, with vehicle traffic kept out of revegetated areas. Physical stabilization, such as temporary erosion control matting, may be required depending on the time of year revegetation is performed. If required, revegetation of the area disturbed by construction of the linear facilities would be accomplished using locally prevalent, fast-growing plant species compatible with adjacent existing plant species. Where the linears are located within farmed areas, the disturbed soils would be stabilized with a temporary fast-growing plant. These areas would be returned to the original crop uses on the first subsequent planting cycle.

During construction of the project and the related linear facilities, dust erosion control measures would be implemented to minimize the wind-blown erosion of soil from the site. Water of a quality equal to or better than either existing surface runoff or irrigation water would be sprayed on the soil in construction areas to control dust and during revegetation.

Sediment barriers, such as straw bales, sand bags, or silt fences, slow runoff and trap sediment. Sediment barriers are generally placed below disturbed areas, at the base of exposed slopes, and along streets and property lines below the disturbed area. Sediment barriers are often placed around sensitive areas, such as wetlands, creeks, or storm drains, to prevent contamination by sediment-laden water.

The site will be constructed on relatively level ground; therefore, it is not considered necessary to place barriers around the property boundary. However, some barriers would be placed in locations where offsite drainage could occur to prevent sediment from leaving the site. Barriers and other sedimentation control measures would be used to prevent runoff into irrigation ditches located near the site. If used, straw bales would be properly installed (staked and keyed), then removed or used as mulch after construction. Runoff detention basins, drainage diversions, and other large-scale sediment traps are not considered necessary due to the level topography and surrounding paved areas. Any soil stockpiles would be stabilized and covered if left onsite for long periods of time, including placement of sediment barriers around the base of the stockpile. These methods can be employed during trenching operations for the water line and the natural gas pipeline.

8.9.5.2 Permanent Erosion Control Measures

Permanent erosion control measures on the site could include drainage and infiltration systems, detention basins, slope stabilization, and long-term revegetation or landscaping. Revegetation or landscaping would follow from planting for short-term erosion control.

A mitigation monitoring plan will be developed in conjunction with CEC staff to set performance standards and monitor the effectiveness of mitigation measures. This plan will address the timing and methods for monitoring plant establishment, as well as reporting and response requirements.

8.9.6 Permits and Agency Contacts

Permits required for the project, the responsible agencies, and proposed schedule are shown in Table 8.9-4.

TABLE 8.9-4
Permits and Agency Contacts for WEC Agriculture and Soils

Permit or Approval	Schedule	Agency Contact	Applicability
Stanislaus County Grading Permit with Franchise Agreement	Prior to Construction	Michael Luevano, Planner Stanislaus County Public Works Department, Developmental Services 1010 10th Street Place, Suite 3500 Modesto, CA 95354 209-525-6552	Grading of County right-of-way for installation of linear facilities
Approval of Grading Plan	Prior to Construction	Brad Klavano, City Engineer City of Turlock 901 South Walnut Street Turlock, CA 95380 209-668-5590	Grading of site surface
Construction Activity, Stormwater and NPDES Permit	Prior to Construction	Christine Palisoc, Water Quality Engineer RWQCB 3443 Routier Road, Suite A Sacramento, CA 95827-3003 916-255-3063	Regulation of stormwater discharge from site and linear facilities during construction

8.9.7 References

City of Turlock. 2002. General Plan: 1992-2012. Drafted September 1992. Adopted March 1993. Reviewed 2002.

California Department of Conservation (CDC). 2002a. Farmland Mapping and Monitoring Program Map for Stanislaus County. Division of Land Resource Protection, Sacramento.

California Department of Conservation (CDC). 2002b. Farmland Mapping and Monitoring Program Statistics web page at http://www.consrv.ca.gov/dlrp/FMMP/fmmp_stats.htm.

Stanislaus County. 1994. Stanislaus County General Plan.

National Resource Conservation Service (NRCS) (formerly the Soil Conservation Service [SCS] of the U.S. Department of Agriculture). 1964. Soil Survey Eastern Stanislaus Area, California. September.

NRCS. 1983. *National Engineering Handbook*.

NRCS. 2002. Official Series Descriptions web page at http://www.statlab.iastate.edu/cgi-bin/osd.

FIGURE 8.9-1
Soil Types in Project Area

FIGURE 8.9-2
Important Farmland in Project Area